

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is an Smart Monitor& Light with 2.4G WIFI function operating in 2412-2462MHz and 5G WIFI function operating in 5725MHz~5850MHz. The EUT is powered by DC 5V2A for USB port. For more detail information pls. refer to the user manual.

2.4GHz WiFi:

Antenna Type: Integral Antenna.

Antenna1 Gain: 3.0dBi.

Modulation Type: BPSK, QPSK, 16QAM, 64QAM, CCK, DQPSK, DBPSK and DSSS.

The nominal conducted output power specified: 20.5dBm (Tolerance: +/-3.5dB).

The nominal radiated output power (e.i.r.p) specified: 23.5dBm (Tolerance: +/-3.5dB).

The maximum conducted output power for the EUT is 24.0dBm in the frequency 2462MHz(IEEE 802.11N20) which is within the production variation.

The minimum conducted output power for the EUT is 17.1dBm in the frequency 2412MHz(IEEE 802.11b) which is within the production variation.

According to FCC Part 2.1091, this unlicensed transmitting devices is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, According to the KDB 447498 and OET 65, the simple calculation as below:

The source-based time averaged maximum radiated power = 24.0dBm +3.0dBi = 27.0dBm = 501.19mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna for 2.4GHz band can be calculated according to OET 65 as follow:

$$= 501.19\text{mW} / 4\pi R^2$$

$$= 0.0998 \text{ mW/cm}^2$$

$$<1\text{mW/cm}^2$$

The MPE limit is 1.0 mW/cm² for general population and uncontrolled exposure in the WIFI frequency range according to FCC Part 1.1310. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.

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5.8GHz WiFi:

Antenna Type: Integral Antenna.

Antenna1 Gain: 3.0dBi.

Modulation Type: BPSK, QPSK, 16QAM, 64QAM and OFDM.

The nominal conducted output power specified: 10.5dBm (Tolerance: +/-1.5dB).

The nominal radiated output power (e.i.r.p) specified: 13.5dBm (Tolerance: +/-1.5dB).

The maximum conducted output power for the EUT is 11.53dBm in the frequency 5745MHz(IEEE 802.11 a) which is within the production variation.

The minimum conducted output power for the EUT is 10.44dBm in the frequency 5825MHz(IEEE 802.11 n-HT20) which is within the production variation.

According to FCC Part 2.1091, this unlicensed transmitting device is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, According to the KDB 447498 and OET 65, the simple calculation as below:

The source-based time averaged maximum radiated power = 12.0dBm +3.0dBi = 15.0dBm =31.62mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna for 2.4GHz band can be calculated according to OET 65 as follow:

$$= 31.62\text{mW} / 4\pi R^2$$

$$= 0.0063 \text{ mW/cm}^2$$

$$<1\text{mW/cm}^2$$

The MPE limit is 1.0 mW/cm² for general population and uncontrolled exposure in the WIFI frequency range according to FCC Part 1.1310. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.

The following RF exposure statement or similar sentence is proposed to be included in the user manual:

“FCC RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.”